

SECTION-A

Note:

- 1) Attempting all MCQs is compulsory. This paper along with the OMR sheet must be returned to the superintendent after due time.
- 2) Fill the circle (A)(B)(C)(D), which one is correct with blue or black ball in separate OMR Sheet like ●
- 3) If more than one circle in the OMR sheet is filled then no credit will be given to such answer.

- i. The Boolean equation for OR gate is _____.
 - (A) $X=AB$
 - (B) $X=A+B$
 - (C) $X=\overline{AB}$
 - (D) $X=\overline{A+B}$
- ii. Telephone communication is the example of transmission of Signals through _____.
 - (A) Electric Wire
 - (B) Optical fibres
 - (C) Electromagnetic waves
 - (D) All of these
- iii. The SI unit of magnetic field B is _____.
 - (A) N/m
 - (B) J/C
 - (C) Watt
 - (D) Tesla
- iv. A transformer is used for _____.
 - (A) Both DC and AC
 - (B) AC voltage
 - (C) DC voltage
 - (D) Farming
- v. The value of Coulomb's constant K depends on _____.
 - (A) Value of charge
 - (B) Distance
 - (C) Material medium
 - (D) All of these
- vi. Instrument used for the detection and testing of electric charge is called _____.
 - (A) Electroscope
 - (B) Electrostatic
 - (C) Capacitor
 - (D) Voltmeter
- vii. 1 KWh= _____.
 - (A) 3600 W
 - (B) 1000 J
 - (C) 3.6×10^6 J
 - (D) 3 J
- viii. Which one of the following material will refract light more.
 - (A) Water
 - (B) Glass
 - (C) Air
 - (D) Diamond
- ix. The relation between focal length and radius of curvature is _____.
 - (A) $f=2R$
 - (B) $R=f$
 - (C) $f=1/2 R$
 - (D) $f=R^2$
- x. Minimum echo distance is reduced in _____.
 - (A) Summer
 - (B) Winter
 - (C) Spring
 - (D) Space
- xi. An average human ear can detect sounds with an intensity as low as _____.
 - (A) 1 w/m
 - (B) 10^{-12} w/m²
 - (C) 12 w/m
 - (D) 10^{12} w/m²
- xii. A wave transports _____.
 - (A) Energy
 - (B) Matter
 - (C) Air
 - (D) Both A and B

Note: Time allowed for section B and C is 2 hours and 40 minutes.

SECTION "B"

Marks: 32

II. Attempt any EIGHT Parts out of the following. Each Part carries equal marks.

- i. A thin rope hangs from high tower so that its upper end is not visible. How can the length of the rope be determined?
- ii. Define intensity of sound what is the unit of intensity.
- iii. Calculate the wave length of sound at the extremes of the audible range 20HZ and 20KHZ at normal room temperature 20°C.
- iv. State and explain Snell's law.
- v. What is Capacitor? Define Capacitance of a capacitor.
- vi. What is resistance and what is the unit of resistance.
- vii. If the unit of electricity cost 8.11 Rs/Kwh. What is cost of running 160w two fans and four 100w light bulbs for 6 hours.
- viii. How can a magnetic field be used to generate electric current?
- ix. What is the difference between analogue and digital electronics?
- x. What is isotopes write the isotopes of carbon and show the numbers of protons, electrons and neutrons.
- xi. Compare coulomb's law and newton's law of universal gravitation.

SECTION "C"

Marks: 21

Note: Attempt any THREE questions of the following. Each question carries equal Marks.

- III. (a) Differentiate between Transverse waves and Longitudinal waves. 4
(b) A positive test charge of $30\mu\text{c}$ is placed in an electric field. Force on it is 0.600N. What is the magnitude of electric field at the location of test charge? 3
- IV. (a) Derive thin lens Equation. 4
(b) Nimra is viewing a flea using magnifier with $f=3\text{cm}$ if her point is at $N=25\text{cm}$. Then calculate the maximum magnification she can get. 3
- V. (a) What is parallel combination of resistors? How we can determine equivalent resistance for different resistors connecting in Parallel? 4
(b) A 30volt battery is connected to a 10-Ohm resistor. Find the amount of current in the circuit. 3
- VI. (a) Explain the force on a current carrying conductor in a magnetic field. 4
(b) ${}_{86}^{220}\text{Rn}$ decays via alpha 86 decay identify the daughter nuclide. 3